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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,926	03/05/2002	Michael G. Flood	BRE4-M98a	7072

7590

04/05/2004

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EXAMINER

EREZO, DARWIN P

ART UNIT	PAPER NUMBER
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3761

DATE MAILED: 04/05/2004

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

10/091,926

Applicant(s)

FLOOD ET AL.

Examiner

Darwin P. Erez

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-- **Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --**
Period f r Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-5, 8-12, 17, 22 and 23 is/are rejected.
- 7) ☒ Claim(s) 2, 6, 7, 13-16 and 18-21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 8, 9, 12, 17, 22 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,199,426 to Aldworth et al.

3. As to claims 1, 8, 9 and 23, Aldworth teaches a method of regulating the inhalation and exhalation of breathable gas to and from a pilot's airway in response to the pilot's spontaneous inhalation and exhalation breathing phases, while the pilot is experiencing excessive g-forces and equipped with an anti-g-suit and a face mask having a common inlet/outlet port in fluid communication with the pilot's airway comprising:

providing a source of pressurized breathable gas (col. 5, lines 51-53);

providing an inhalation valve **33** connected between the source of pressurized gas and the inlet/outlet port **13** of the face mask; providing an exhalation valve **65** connected between the inlet/outlet port of the face mask and a low pressure area (col. 6, lines 37-44);

opening and closing the inhalation and exhalation valves, respectively, during the inhalation phase and controlling the pressure of gas supplied to the inlet/outlet port so

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that the pressure rises from a predetermined minimum to a predetermined maximum to increase the volume of breathable gas supplied to the pilot (inhalation valve **33** is a demand valve which opens during inhalation and closes during exhalation, col. 6, line 64 – col. 7, line 9; the exhalation valve **65** is closed during inhalation since the pressure in the outlet **13** wont be excessive while the pilot is inhaling); and

opening and closing the exhalation and inhalation valves, respectively, during the exhalation phase and controlling the pressure in the inlet/outlet port so that the pressure falls from the predetermined maximum to the predetermined minimum to decrease the exhalation effort required by the pilot (again, inhalation valve **33** is a demand valve which would be closed during exhalation, col. 6, line 64 – col. 7, line 9; during exhalation, exhalation valve **65** will open when the pressure in the outlet **13** exceeds a prescribed/predetermined amount, which would occur if the pilot is subjected to high g-forces, col. 6, lines 33–49), the maximum pressure being a function of the g-forces to which the pilot is being subjected, the minimum pressure having a value less than the maximum pressure; wherein the pilot is equipped with an inflatable chest section and comprising the steps of inflating and deflating the chest section in synchronism with the gas supplied from the face mask at the same pressure (col. 7, lines 38–49).

4. **As to claim 12**, Aldworth teaches a system comprising:

a face mask having a common inlet/outlet port in fluid communication with the pilot's airway;

an inhalation valve **33** having an inlet connected to a high pressure source (col. 5, lines 51–53) and an outlet **13** connected to the face mask, the inhalation valve

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arranged to connect the high pressure source to the mask in response to a pressure in the mask falling below a minimum level (since inhalation valve **33** is a demand valve, an inhalation by the pilot would create a negative pressure that would trigger the demand valve, which would also be the minimum pressure level) and to limit the maximum pressure in the mask to a maximum pressure level in response to the g-force to which the pilot is subjected (col. 3, lines 52-63); and

an exhalation valve **65** having an inlet (exhalation valve is in fluid communication with outlet **13**, which is connected to the face mask) and an outlet connected to a low pressure region (col. 6, lines 37-44), the exhalation valve arranged to connect the mask port to the low pressure region in response to the pressure in the mask port reaching the maximum level and to limit the minimum pressure in the mask to the minimum level in response to the g-force to which the pilot is being subjected (during exhalation, valve **65** opens to relieve pressure and return the pressure to a prior, predetermined state; col. 6, lines 44-49).

5. **As to claims 17 and 22**, Aldworth teaches an apparatus comprising:

a face mask having a common inlet/outlet port in fluid communication with the pilot's lungs and the chest compression section;

an inhalation valve **33** having an inlet connected to the high pressure source (col. 5, lines 51-53) and an outlet connected to the mask;

at least one g-force sensor **99**;

a pressure regulator **46** connected to the gas source, the mask port and the inhalation valve and being responsive to the g-force sensor for opening the inhalation

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valve to conduct gas from the gas source to the mask inlet/outlet port during the inhalation mode and for closing the inhalation valve when the pressure in the mask port reaches a maximum value, the maximum value being a function of the g-force to which the pilot is being subjected;

an exhalation valve **65** connected to the high pressure source, the low pressure region and the mask port; and

a flow regulator **63** connected to the high pressure source and the inhalation valve outlet and responsive to the g-force sensor for conducting gas from the mask port to the low pressure region during the exhalation mode while limiting the pressure within the mask port to a predetermined minimum value as a function of the g-force.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aldworth et al.

8. **As to claims 3-5**, Aldworth is silent with regards to the predetermined minimum pressure within the range of 14-16 inches of H₂O less than the maximum pressure at any g-force greater than 4, and wherein the relationship between the pressure and the g-load is linear between the g load of 4-5.

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However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to arrive at the recited limitation because the applicant has recited in the specification, page 13, line 25 – page 13, line 1, that is known in the state of the art for conventional anti-g equipment to operate at minimum pressure of 14-20 less than the maximum pressure at a g-force greater than 4. Furthermore, it is well known in the art for most conventional anti-g equipment to have a linear relationship between the pressure and the g-load.

9. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aldworth et al. and in view of US 4,219,039 to Jaggars.

10. **As to claim 10 and 11**, Aldworth is silent with regards to inflating an anti-g suit with gas at a pressure which varies nonlinearly over the anticipated g load, wherein the pressure increases at a faster rate during low g loads and at a slower rate at higher g loads.

Jaggars teaches a method of inflating an anti-g suit with gas at a pressure which varies nonlinearly over the anticipated g load, wherein the pressure increases at a faster rate during low g loads and at a slower rate at higher g loads (see Fig. 8).

Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to add the step of Jaggars to the method of Aldworth because it prevents the pilot from being over loaded at higher g-loads.

Allowable Subject Matter

11. Claims 2, 6, 7, 13-16 and 18-21 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Response to Arguments

12. Applicant's arguments filed 1/20/04 have been fully considered but they are not persuasive.

13. In response to applicant's arguments that Aldworth fails to teach a decrease in gas pressure in the face mask inlet/outlet during exhalation, the Examiner would like to point out that the Aldworth teaches in col. 6, lines 33-4, a valve **65** that opens when a predescribed amount of pressure is reached in the face mask inlet/outlet **13**; it is inherent that the face mask inlet/outlet **13** won't reach the predescribed amount of pressure during inhalation since the pressure in the inlet/outlet **13** is reduced when the user inhales. However, when a user attempts to exhale while subjected to high g's (during high g's, the breathing pressure is increased), valve **65** will open to relieve the pressure within inlet/outlet **13**.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darwin P. Erez who telephone number is (703) 605-0420. The examiner can normally be reached on M-F (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Milano can be reached on (703)308-2496. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dpe


GLENN K. DAWSON
PRIMARY EXAMINER